

REMARKS

Claims 10 to 28 are pending in the application. Claims 10 to 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gehringhoff et al. (US 6,878,220) in view of Gupta et al. (US 2002/0174920). Claims 10 and 20 have been amended. Claims 29 and 30 have been added. Reconsideration of the application based on the following is respectfully requested.

Rejections under 35 U.S.C. §103(a)

Claims 10 to 28 were rejected under 35 U.S.C. §103(a) as being unpatentable over Gehringhoff et al. (US 6,878,220) in view of Gupta et al. (US 2002/0174920).

Gehringhoff “relates to a method of making a hardened sheet metal article” and “relates to a press mold for carrying out the method” (see, e.g. Gehringhoff, col. 1, lines 14 to 16). Gehringhoff discloses ripping out the bottom of a depression during calibration (see, e.g. Gehringhoff, col. 2, lines 50 to 55). Gehringhoff also discloses trimming or cutting in a post-operation (see, e.g. Gehringhoff, col. 2, lines 60 to 62).

Gupta “relates to a heat treatment process for shaped articles, particularly those suitable for use in the fabrication of automotive body panels” and more particularly “relates to such articles made from aluminum alloy sheet material that exhibits an improvement of hardness after painting and baking operations have been carried out” (see, e.g. Gupta, paragraph [0003]).

Claim 10 as amended recites: “A process for producing a press-hardened component from a semi-finished product made of unhardened, hot-formable steel sheet, the process comprising:
forming a component blank from the steel semi-finished product using a cold-forming process, the component blank including a margin contour corresponding approximately to a contour of the press-hardened component and a margin edge;
trimming the component blank at the margin edge to the margin contour;
heating and press-hardening the trimmed component blank using a hot-forming tool; and
covering the press-hardened component blank with a corrosion-prevention layer in a coating step.”

Support can be found in claim 10 and at paragraphs [0003], [0018] and [0025], for example.

It is respectfully submitted that Gehringhoff does not teach or disclose “trimming the component blank at the margin edge to the margin contour” and “heating and press-hardening the trimmed component blank using a hot-forming tool” as claimed in claim 10 of the present invention. While the bottom of a depression may be ripped out, this is not “trimming the component blank at the margin edge” as claimed. Furthermore, the trimming in Gehringhoff is a post-operation and thus no “trimmed component blank” is heated using a hot-forming tool. The assertion on page 3 of the Office Action that “Applicant should note that the component of Gehringhoff et al. can be trimmed before or after the press-hardening step” is believed to be incorrect and certainly the margin edges are trimmed only in a post-operation in Gehringhoff.

Moreover, it is respectfully submitted that neither Gehringhoff nor Gupta teach or disclose “covering the press-hardened component blank with a corrosion-prevention layer in a coating step” as claimed in claim 10 of the present invention. The treatment in Gupta is for painting of aluminum alloy products, which do not require corrosion-prevention layers. In contrast, the press-hardened, trimmed component blank claimed in claim 10 of the present invention is formed from a steel semi-finished product. Comparing aluminum with steel, and in particular high strength or ultra-high strength steel, is incorrect from a technical perspective because aluminum and steel are significantly different materials having significantly different properties. For example: the maximum values of hardness properties, tensile strength and temperature of thermal treatment of aluminum is several times less than those of steel; only cold-forming is possible for aluminum while hot-forming and cold-forming is possible for steel; thermal treatment of aluminum may only be applied on a finished component after the forming operation while thermal treatment of steel may be applied on a semi-finished product during the press hardening process in one technological process; and, with respect to finishing operations, painting of aluminum is for decorative purposes and avoiding aluminum oxide layer Al₂O₃ while a corrosion prevention layer is applied to steel for preserving its mechanical properties, which can be damaged by corrosion during the industrial use.

As Gupta relates to aluminum and claim 10 recites a process for producing a press-hardened component made from steel, it is respectfully submitted that one having ordinary skill in the art would not have combined Gupta with Gehringhoff and actually would have been discouraged from doing so based on the significant differences between aluminum and steel and their respective inherent properties and industrial use. Aluminum alloy products such as those described in Gupta do not require corrosion-prevention layers. The coating step claimed in claim 10 of the present invention thus is not taught or disclosed by Gupta; and the process claimed in claim 10 thus is not obvious over Gehringhoff in view of Gupta even if one skilled in the art were to combine the two references, which applicants respectfully maintain the references themselves inherently teach away from so combining.

Withdrawal of the rejections to claim 10 and its dependent claims under 35 U.S.C. §103(a) therefore is respectfully requested.

With further respect to claim 13, claim 13 recites: "The process as recited in claim 10, wherein the coating step includes a hot-dip galvanization process." Gupta's process is painting and it is respectfully submitted that it would not have been obvious to substitute hot-dip galvanization for the painting of Gupta, which relates to aluminum alloys that do not need galvanization.

With further respect to claim 14, claim 14 recites: "The process as recited in claim 10, wherein the coating step includes a thermal diffusion process." Gupta's process is painting and it is respectfully submitted that it would not have been obvious to substitute thermal diffusion for the painting of Gupta.

With further respect to claims 15 to 17, which recite steps of cleaning and blasting prior to the coating step recited in claim 10, it is respectfully submitted that Gehringhoff does not teach or disclose any scale removal at all. Oxidation (scale) appears on the surface of a component after a hot stamping operation, with such component not being suitable for subsequent applications such as glue adhesion, welding operations and adhesion of a coating layer without prior scale removal, which is not disclosed in Gehringhoff.

With further respect to claim 19, claim 19 recites: “The process as recited in claim 10, further comprising conditioning the coated component blank after the coating step.” As described in paragraphs [0016], [0017] and [0038] of the present specification, conditioning is tempering the component, which is not taught or disclosed in either of the cited references as claimed in claim 19 of the present invention. Moreover, it is respectfully submitted that conditioning the coated component blank after the coating step as claimed in claim 19 is not old and well known in the art as asserted on page 3 of the Office Action, especially when considering the other steps in the claimed process.

Independent claim 20 and its dependent claims

Claim 20 as amended recites: “A process for producing a press-hardened component from a semi-finished product made of unhardened, hot-formable steel sheet, the process comprising:

heating and press-hardening the semi-finished steel product using a hot-forming tool so as to form a press-hardened component blank, having a margin contour corresponding approximately to ~~a~~the press-hardened component and a margin edge;

trimming the press-hardened component blank at the margin edge to the margin contour;

covering the press-hardened, trimmed component blank with a corrosion-prevention layer in a coating step.”

Support can be found in claim 20 and at paragraphs [0003], [0018] and [0025], for example.

It is respectfully submitted that neither Gehringhoff nor Gupta teach or disclose “covering the press-hardened component blank with a corrosion-prevention layer in a coating step” as claimed in claim 20 of the present invention. The treatment in Gupta is for painting of aluminum alloy products, which do not require corrosion-prevention layers, as discussed above with respect to claim 10. The press-hardened, trimmed component blank claimed in claim 20 of the present invention is formed from a semi-finished steel product. As aluminum alloy products such as those described in Gupta do not require corrosion-prevention layers, it is respectfully submitted that the coating step claimed in claim 20 of the present invention is not taught or disclosed by Gupta and that claim 20 thus is not obvious over Gehringhoff in view of Gupta.

Moreover, as Gupta relates to aluminum and claim 20 recites a process for producing a press-hardened component made from steel, it is respectfully submitted that one having ordinary skill in the art would not have combined Gupta with Gehringhoff and actually would have been discouraged from doing so based on the significant differences between aluminum and steel and their respective inherent properties, as discussed above with respect to claim 10. Aluminum alloy products such as those described in Gupta do not require corrosion-prevention layers. The coating step claimed in claim 20 of the present invention thus is not taught or disclosed by Gupta; and the process claimed in claim 20 thus is not obvious over Gehringhoff in view of Gupta even if one skilled in the art were to combine the two references, which applicants respectfully maintain the references themselves inherently teach away from so combining, as discussed above.

Withdrawal of the rejections to claim 20 and its dependent claims under 35 U.S.C. §103(a) therefore is respectfully requested.

With further respect to claim 22, claim 22 recites: "The process as recited in claim 20, wherein the coating step includes a hot-dip galvanization process." Gupta's process is painting and it is respectfully submitted that it would not have been obvious to substitute hot-dip galvanization for the painting of Gupta, which relates to aluminum alloys that do not need galvanization.

With further respect to claim 23, claim 23 recites: "The process as recited in claim 20, wherein the coating step includes a thermal diffusion process." Gupta's process is painting and it is respectfully submitted that it would not have been obvious to substitute thermal diffusion for the painting of Gupta.

With further respect to claims 24 to 26, which recite steps of cleaning and blasting prior to the coating step recited in claim 20, it is respectfully submitted that Gehringhoff does not teach or disclose any scale removal at all. Oxidation (scale) appears on the surface of a component after a hot stamping operation making such component not suitable for subsequent operations such as glue adhesion, welding operations and adhesion of a coating layer without prior scale removal.

With further respect to claim 27, claim 27 recites: "The process as recited in claim 20, further comprising conditioning the coated component blank after the coating step." As described in paragraphs [0016], [0017] and [0038] of the present specification, conditioning is tempering the component, which is not taught or disclosed as claimed in either of the cited references. Moreover, it is respectfully submitted that conditioning the coated component blank after the coating step as claimed in claim 27 is not old and well known in the art as asserted on page 3 of the Office Action, especially when considering the other steps in the claimed process.

The combination of all of the described claims and manufacturing operations into one technological process is unique.

New Claims

Claims 29 and 30 have been added and recite painting the component. Support can be found at [0016] for example. These claims make clear that, in addition to a corrosion-prevention layer, there is also a painting layer. Neither Gupta nor Gehringhoff disclose both.

CONCLUSION

The present application is respectfully submitted as being in condition for allowance and applicants respectfully request such action.

Respectfully submitted,
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